



## COURSE OUTLINE: RAA204 - PROJECT COURSE

Prepared: Donovan Kennedy

Approved: Corey Meunier, Chair, Technology and Skilled Trades

<b>Course Code: Title</b>	RAA204: PROJECT COURSE
<b>Program Number: Name</b>	4073: ROBOTICS & AUTOMATIO
<b>Department:</b>	ROBOTICS GRADUATE CERTIFICATE
<b>Semesters/Terms:</b>	21W
<b>Course Description:</b>	The objective of this course is to allow the student to research a relevant robotic application used in industry and perform a similar operation in our robot lab using the automation equipment they have become familiar with over the course of the program.
<b>Total Credits:</b>	3
<b>Hours/Week:</b>	3
<b>Total Hours:</b>	45
<b>Prerequisites:</b>	RAA104, RAA106, RAA110, RAA111, RAA112
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<b>4073 - ROBOTICS &amp; AUTOMATIO</b> VLO 1 Construct and evaluate robotic control programs for various scenarios against which to model the functionality and stability of automation systems. VLO 2 Plan and lead the installation of new industrial equipment and its physical and digital integration with existing systems. VLO 3 Collaborate with health and safety personnel to develop plans and specifications that incorporate, among other elements, safety controls and physical guarding to comply with all applicable regulatory safety designs and standards used in industrial robotic applications. VLO 4 Assist in the assessment and management of robotic systems by applying business principles to the electromechanical environment. VLO 5 Validate and optimize the functioning of motor, drive, control, and robotic systems. VLO 6 Integrate budgetary, technical, functional and safety considerations in the design and optimization of custom automation solutions. VLO 7 Formulate and use a variety of troubleshooting techniques on new and legacy electromechanical equipment, processes, systems and subsystems.
<b>Essential Employability Skills (EES) addressed in this course:</b>	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems.

Please refer to program web page for a complete listing of program outcomes where applicable.

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.



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EES 6	Locate, select, organize, and document information using appropriate technology and information systems.
EES 7	Analyze, evaluate, and apply relevant information from a variety of sources.
EES 8	Show respect for the diverse opinions, values, belief systems, and contributions of others.
EES 9	Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
EES 10	Manage the use of time and other resources to complete projects.
EES 11	Take responsibility for ones own actions, decisions, and consequences.

#### Course Evaluation:

#### Other Course Evaluation & Assessment Requirements:

Grade  
Definition Grade Point Equivalent  
A+ 90 - 100% 4.00  
A 80 - 89% 4.00  
B 70 - 79% 3.00  
C 60 - 69% 2.00  
D (Fail) 50 - 59% 1.00  
F (Fail) 49% and below 0.00  
CR (Credit) Credit for diploma requirements has been awarded.  
S Satisfactory achievement in field /clinical placement or non-graded subject area.  
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.  
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.  
NR Grade not reported to Registrar's office.  
W Student has withdrawn from the course without academic penalty.

#### Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Identify which elements of a manufacturing process are suitable for automation	1.1 Investigate processes that would benefit from automation 1.2 Identify processes that cannot or should not be automated 1.3 Synthesize results of process investigation with our robotics lab and equipment
Course Outcome 2	Learning Objectives for Course Outcome 2
2. Research a relevant automation project that can be implemented in our robotics lab using the robots, conveyors, cameras, etc.	2.1 Investigate case studies and projects that use robotics in manufacturing environments 2.2 Plan and prepare documentation that outlines project specifications 2.3 Identify, interpret and apply applicable safety policies and regulations such as lab safety policies, safe operating procedures, WHMIS/GHS, etc.
Course Outcome 3	Learning Objectives for Course Outcome 3
3. Manage and execute an automated project which uses robots.	3.1 Implement the specifications and requirements of the developed project plan. 3.2 Demonstrate the ability to adhere to schedules and track the progression of a project as compared to estimated timelines. 3.3 Maintain project logbook documenting project task

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	<p>progression and commissioning/testing processes.</p> <p>3.4 Participate in accomplishing project goals and interact effectively in a team environment.</p> <p>3.5 Demonstrate reliability and assume responsibility for one's own tasks in a team environment.</p> <p>3.6 Participate effectively in project progress meetings</p> <p>3.7 Produce sufficient project documentation to allow repetition of project results.</p>										
<b>Evaluation Process and Grading System:</b>	<table> <tr> <th>Evaluation Type</th><th>Evaluation Weight</th></tr> <tr> <td>Individual Contribution to Project and Team Success</td><td>20%</td></tr> <tr> <td>Project Demonstration</td><td>35%</td></tr> <tr> <td>Project Final Report</td><td>35%</td></tr> <tr> <td>Project Proposal and Presentation</td><td>10%</td></tr> </table>	Evaluation Type	Evaluation Weight	Individual Contribution to Project and Team Success	20%	Project Demonstration	35%	Project Final Report	35%	Project Proposal and Presentation	10%
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<b>Date:</b>	June 11, 2020										
<b>Addendum:</b>	Please refer to the course outline addendum on the Learning Management System for further information.										

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